

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all ;prior versions, and listings, of claims in the application.

Claims 1-10 (Canceled) Please cancel claims 1-10.

11. (Original) A process of production of a semiconductor device comprising the steps of:

forming a first insulating film on a semiconductor substrate;

forming a semiconductor layer on the first insulating film;

forming a second insulating film comprising a non-doped silicon oxide film on the semiconductor layer;

forming a third insulating film comprising a silicon oxide film containing at least phosphorus on the second insulating film; and

forming a fourth insulating film comprising a non-doped silicon oxide film on the third insulating film.

12. (Original) A process of production of a semiconductor device as set forth in claim 11, wherein the step of forming the second, third, and fourth insulating films comprises three different chemical vapor deposition (CVD) steps.

13. (Original) A process of production of a semiconductor device as set forth in claim 11, wherein the step of forming the second, third, and fourth insulating films comprises a continuous chemical vapor deposition

process where a supply amount of phosphorus is changed before and after the step of forming the third insulating film.

14. (Original) A process of production of a semiconductor device as set forth in claim 11, further comprising the steps of:

forming a second conductivity type collector region at the surface layer of the semiconductor substrate of the first conductivity type;

forming a first conductivity type base region at the surface layer of the second conductivity type collector region;

forming the first insulating film on the semiconductor substrate and forming a first opening in the first insulating film;

forming a base electrode comprising the semiconductor layer in the first opening and on the first insulating film around the first opening;

forming the second, third, and fourth insulating films on the base electrode and the first insulating film around the base electrode;

forming a second opening in the base electrode and the second, third, and fourth insulating films in the first opening;

forming an emitter take-out part comprising a second semiconductor layer in the second opening and on the fourth insulating film around the second opening; and

diffusing an impurity from the emitter take-out part and forming a second conductivity type emitter region at the surface layer of the first conductivity type base region.

15. (Original) A process of production of a semiconductor device as set forth in claim 11, further comprising the steps of:

forming a second conductivity type base region at the surface layer of the semiconductor substrate of the first conductivity type;

forming the first insulating film on the semiconductor substrate and forming a collector opening and emitter opening in the first insulating film;

forming the semiconductor layer in the collector opening and emitter opening and on the first insulating film;

etching the semiconductor layer and forming a collector take-out electrode comprising the semiconductor layer in the collector opening and on the first insulating film around the collector opening;

forming by the etching an emitter take-out electrode comprising the semiconductor layer in the emitter opening and on the first insulating film around the emitter opening;

forming the second, third, and fourth insulating films on the collector take-out electrode, emitter take-out electrode, and first insulating film around the emitter take-out electrode and the collector take-out electrode;

diffusing an impurity from the collector take-out electrode and forming a first conductivity type collector region at the surface layer of the second conductivity type base region;

diffusing an impurity from the emitter take-out electrode and forming a first conductivity type emitter region at the surface layer of the second conductivity type base region;

forming a contact hole in the first, second, third, and fourth insulating films on the second conductivity type base region; and

forming a base electrode at the contact hole.

16. (Original) A process of production of a semiconductor device as set forth in claim 11, further comprising the steps of:

forming a second conductivity type impurity diffusion layer at the surface layer of the semiconductor substrate of the first conductivity type;

forming a first conductivity type collector region at the surface layer of the second conductivity type impurity diffusion layer;

forming a second conductivity type base region at the surface layer of the first conductivity type collector region;

forming the first insulating film on the semiconductor substrate;

forming a collector opening in the first insulating film on the first conductivity type collector region and forming an emitter opening in the first insulating film on the second conductivity type base region;

forming the semiconductor layer in the collector opening and emitter opening and on the first insulating film;

forming a collector take-out electrode comprising the semiconductor layer in the collector opening and on the first insulating film around the collector opening;

forming an emitter take-out electrode comprising the semiconductor layer in the emitter opening and on the first insulating film around the emitter opening;

forming the second, third, and fourth insulating films on the collector take-out electrode, emitter take-out electrode, and first insulating film around the collector take-out electrode and emitter take-out electrode;

diffusing an impurity from the collector take-out electrode and forming a collector take-out part at the surface layer of the first conductivity type collector region;

diffusing an impurity from the emitter take-out electrode and forming a first conductivity type emitter region at the surface layer of the second conductivity type base region;

forming a contact hole in the first, second, third, and fourth insulating films on the second conductivity type base region; and

forming a base electrode at the contact hole.

17. (Original) A process of production of a semiconductor device as set forth in claim 11, further comprising the steps of:

forming a first conductivity type collector region in the semiconductor substrate of the first conductivity type;

forming a second conductivity type base region in a part of the semiconductor substrate on the first conductivity type collector region;

forming the first insulating film on the semiconductor substrate;

forming a collector opening in the first insulating film on the first conductivity type collector region and forming an emitter opening in the first insulating film on the second conductivity type base region;

forming the semiconductor layer in the collector opening and emitter opening and on the first insulating film;

forming a collector take-out electrode comprising the semiconductor layer in the collector opening and on the first insulating film around the collector opening;

forming an emitter take-out electrode comprising the semiconductor layer in the emitter opening and on the first insulating film around the emitter opening;

forming the second, third, and fourth insulating films on the collector take-out electrode, emitter take-out electrode, and first insulating film around the collector take-out electrode and emitter take-out electrode;

diffusing an impurity from the collector take-out electrode to form a collector take-out part at the surface layer of the first conductivity type collector region;

diffusing an impurity from the emitter take-out electrode to form a first conductivity type emitter region at the surface layer of the second conductivity type base region;

forming a contact hole in the first, second, third, and fourth insulating films on the second conductivity type base region; and

forming a base electrode at the contact hole.

18. (Original) A process of production of a semiconductor device as set forth in claim 11, further comprising the steps of:

forming a lower electrode layer at the surface layer of the semiconductor substrate;

forming the first insulating film on the semiconductor substrate and forming an opening in the first insulating film on the lower electrode layer;

forming a capacitor dielectric layer in the opening and on the first insulating film around the opening;

forming an upper electrode comprising the semiconductor layer on the capacitor dielectric layer;

forming the second, third, and fourth insulating films on the upper electrode and first insulating film around the upper electrode;

forming a contact hole in the second, third, and fourth insulating films on the upper electrode; and

forming an interconnection at the contact hole.

19. (Original) A process of production of a semiconductor device as set forth in claim 11, further comprising the steps of:

after forming the semiconductor layer on the first insulating film, diffusing an impurity to the semiconductor layer;

etching the semiconductor layer and forming a resistor layer comprising the semiconductor layer;

forming the second, third, and fourth insulating films on the resistor layer and the insulating film around the resistor layer;

forming a contact hole in the second, third, and fourth insulating films on the resistor layer; and

forming an interconnection at the contact hole.